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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/650,738	08/30/2000	Osamu Itokawa	35.C14752	2440

5514 7590 01/15/2004

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EXAMINER	
CHANG, JON CARLTON	
ART UNIT	**PAPER NUMBER**
2623	6

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/650,738	ITOKAWA, OSAMU	
	Examiner	Art Unit	
	Jon Chang	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 15-20* is/are rejected.

7)☒ Claim(s) *4-14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 August 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Response to Applicant's Amendment and Arguments

1. The amendment filed July 14, 2003, has been entered and made of record.

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the article, "Edge Oriented Block Motion Estimation for Video Coding" by Chan et al. (hereinafter "Chan") in view of either of the following two references: U.S. Patent 5,999,651 to Chang et al. (hereinafter "Chang"), or the article entitled, "Dynamic Segmentation of Traffic Scenes" by Giachetti et al. (hereinafter "Giachetti").

As to claim 19, Chan discloses an image processing method comprising the steps of:

a) inputting consecutive image data (Fig.4, input for current frame);

b) dividing the image data into blocks each constituted of a plurality of pixels (page 137, first paragraph of section 2, third sentence);

c) detecting a motion vector of each block (page 137, first paragraph of section 2, fourth-sixth sentences);

d) judging a border block in accordance with the detected motion vector, the border block forming a boundary area between an object area and a background area corresponding to a background of the object area (page, 138, section 3, note block types 1, 2 and 3; page 139, left column, first sentence); and

e) extracting image data in the object area in accordance with the judged border block (page 140, left column, step (d)).

With regard to the extracting step, Chan does not disclose setting an initial contour of the object area on the basis of the border block judged in the judging step, and extracting the object area using the set initial contour and an active outline model. However, Chang teaches setting an initial contour of an object area (column 9, lines 43-50), and extracting the object area using the set initial contour and an active outline model (column 10, lines 33-42; the snake is an active contour, and the object area is extracted in the tracking). Based on the disclosure of Chang, it is clear that Chang's teaching would improve object area extraction. Therefore, it would have been obvious to one of ordinary skill in the art to modify Chan's method according to Chang.

Additionally, Giachetti teaches setting an initial contour (section3, first paragraph), and extracting the object area using the set initial contour and an active contour model (section 3.3). Giachetti states that the technique allows a fast and sufficiently precise detection of moving objects (abstract). Therefore, it would have

been obvious to one of ordinary skill in the art to modify Chan's method according to Giachetti.

Note with regard to claim 1: Chan explicitly describes a method, but does not mention an apparatus *per se*. However, it is clear that the method must be implemented on some sort of apparatus. Typically, video coding and motion compensation processes are implemented on apparatus. Note further the article's comments regarding "8-bit fixed point implementation" (page 142, right column), "video compression system" (page 143, right column) and "VLSI implementation' (page 143, right column). In view of this, the apparatus, with associated means, are considered inherent.

As to claim 1, Chan discloses an image processing apparatus (inherent), comprising:

a) input means for inputting consecutive image data (Fig.4, input for current frame);

b) dividing means for dividing the image data into blocks each constituted of a plurality of pixels (page 137, first paragraph of section 2, third sentence);

c) detecting means for detecting a motion vector of each block (page 137, first paragraph of section 2, fourth-sixth sentences);

d) judging means for judging a border block in accordance with the motion vector detected by said detecting means, the border block forming a boundary area between an object area and a background area corresponding to a background of the object area

(page, 138, section 3, note block types 1, 2 and 3; page 139, left column, first sentence); and

e) extracting means for extracting image data in the object area in accordance with the border block judged by said judging means (page 140, left column, step (d)).

With regard to the extracting means, Chan does not disclose setting an initial contour of the object area on the basis of the border block judged in the judging step, and extracting the object area using the set initial contour and an active outline model. However, Chang teaches setting an initial contour of an object area (column 9, lines 43-50), and extracting the object area using the set initial contour and an active outline model (column 10, lines 33-42; the snake is an active contour, and the object area is extracted in the tracking). Based on the disclosure of Chang, it is clear that Chang's teaching would improve object area extraction. Therefore, it would have been obvious to one of ordinary skill in the art to modify Chan's apparatus according to Chang.

Additionally, Giachetti teaches setting an initial contour (section3, first paragraph), and extracting the object area using the set initial contour and an active contour model (section 3.3). Giachetti states that the technique allows a fast and sufficiently precise detection of moving objects (abstract). Therefore, it would have been obvious to one of ordinary skill in the art to modify Chan's apparatus according to Giachetti.

Claim 20 is drawn to a storage medium storing program codes for image processing steps which correspond to the steps of claim 19. Chan does not explicitly mention the storage medium and program codes. However, the Examiner takes Official

Notice that it is known to perform motion estimation and video coding processes using computer-based systems. It would have been obvious to implement Chan's method in a computer-based system because this would provide greater flexibility, and, given the wide availability and low cost of computers, would have been more economical in some applications. Note further Chan's use of the term "algorithm," (e.g., page 140, right column, section 5), implying desired implementation on a computer. It therefore would have been obvious to one of ordinary skill in the art to implement Chan's method in a computer-based system. Such a system would inherently have the storage medium and program codes.

4. Claims 1-3, 15-16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,343,097 to Kobayashi et al. (hereinafter "Kobayashi"), in view of either of the following two references: U.S. Patent 5,999,651 to Chang et al. (hereinafter "Chang"), or the article entitled, "Dynamic Segmentation of Traffic Scenes" by Giachetti et al. (hereinafter "Giachetti").

As to claim 1, Kobayashi discloses an image processing apparatus, comprising:

a) input means for inputting consecutive image data (Fig.3, "Picture Signal Input");

b) dividing means for dividing the image data into blocks each constituted of a plurality of pixels (Fig.3, element 308; column 9, lines 21-22);

c) detecting means for detecting a motion vector of each block (column 9, lines 21-22);

d) judging means for judging a border block in accordance with the motion vector detected by said detecting means, the border block forming a boundary area between an object area and a background area corresponding to a background of the object area (column 10, lines 33-38; Fig.8B); and

e) extracting means for extracting image data in the object area in accordance with the border block judged by said judging means (column 10, lines 51-52).

With regard to the extracting means, Kobayashi does not disclose setting an initial contour of the object area on the basis of the border block judged in the judging step, and extracting the object area using the set initial contour and an active outline model. However, Chang teaches setting an initial contour of an object area (column 9, lines 43-50), and extracting the object area using the set initial contour and an active outline model (column 10, lines 33-42; the snake is an active contour, and the object area is extracted in the tracking). Based on the disclosure of Chang, it is clear that Chang's teaching would improve object area extraction. Therefore, it would have been obvious to one of ordinary skill in the art to modify Kobayashi's apparatus according to Chang.

Additionally, Giachetti teaches setting an initial contour (section3, first paragraph), and extracting the object area using the set initial contour and an active contour model (section 3.3). Giachetti states that the technique allows a fast and sufficiently precise detection of moving objects (abstract). Therefore, it would have been obvious to one of ordinary skill in the art to modify Kobayashi's apparatus according to Giachetti.

Regarding claim 2, Kobayashi discloses an apparatus according to claim 1, wherein said judging means judges the border block in accordance with an occurrence frequency of the motion vector detected by said detecting means (column 9, lines 34-40).

Regarding claim 3, Kobayashi discloses an apparatus according to claim 2, wherein said judging means classifies blocks into the border block, an object block corresponding to the object area, and a background block corresponding to the background area (In column 9, lines 34-40, Kobayashi categorizes the codes with the three highest frequencies as having a moving portion. This includes the moving portion, i.e., the object area, as well as the contour, i.e., border, of the object, e.g., column 10, lines 33-38. The other category is "other frequencies," column 9, lines 38-39, which since it does not correspond to moving portions, must be background.).

With regards to claim 15, Kobayashi discloses an apparatus according to claim 3, further comprising encoding means for encoding the image data in the object area extracted by said extracting means (column 5, lines 38-41).

Regarding claim 16, Kobayashi discloses an apparatus according to claim 15, wherein said encoding means encodes the image data in the background area (column 5, lines 38-39; the picture data is encoded; the picture data includes the background area).

In regards to claim 18, Kobayashi discloses an apparatus according to claim 15, further comprising recording means for recording the image data encoded by said encoding means in a storage medium (column 6, lines 36-40).

Claim 19 is drawn to a method which corresponds to claim 1. The discussion provided above for claim 1 is applicable to claim 19.

As to claim 17, Kobayashi does not disclose a transmitting means for transmitting the image data encoded by said encoding means. However, the Examiner takes Official Notice that encoding means are extremely well known in the art. Kobayashi's system is intended for outputting of encoded NTSC signals (Fig.2, elements 117, 118 and 119). NTSC signals are typically transmitted, as is well known. Therefore, it would have been obvious to one of ordinary skill in the art employ a transmitting means in Kobayashi's system.

Claim 20 is drawn to a storage medium storing program codes for image processing steps which correspond to the steps of claim 19. Kobayashi does not explicitly mention the storage medium and program codes. However, the Examiner takes Official Notice that it is know to perform motion compensation and encoding processes using computer-based systems. It would have been obvious to implement Kobayashi's method in a computer-based system because this would provide greater flexibility, and, given the wide availability and low cost of computers, would have been more economical in some applications. It therefore would have been obvious to one of ordinary skill in the art to implement Kobayashi's method in a computer-based system. Such a system would inherently have the storage medium and program codes.

Allowable Subject Matter

5. Claims 4-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

References Cited

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

"An Accurate Region Based Object Tracking for Video Sequences" by Xu et al. teaches extracting objects using an active contour model.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jon Chang whose telephone number is (703)305-8439. The examiner can normally be reached on M-F 8:00 a.m.-6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703)308-6604. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

Jon Chang
Primary Examiner
Art Unit 2623

Jon Chang
January 10, 2004